ATOMIC ENERGY Letter

THE FIRST AND ONLY ATOMIC [illegible] SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS, INC., 509 FIFTH AVENUE, NEW YORK 17, N. Y.

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Dear Sir:

During the 12-month period ending last March 31st the USAEC entered into nearly 11,000 prime contracts and purchase orders, Gordon Dean, Chairman, USAEC, recently told a New York State Chamber of Commerce meeting in New York City. Of these 11,000, Dean stated, about 52% went to business firms with less than 500 employees, about 41% to big business firms, and 7% to educational institutions and others. The holders of these prime contracts, in turns, entered into more than 280,000 sub-contracts and purchase orders, of which 62½% went to small business, 36% to big business, and 1½% to educational institutions and the like. Dollar wise, of course, Dean said, the preponderance of the USAEC's prime contracts went to big business.....Dean gave the meeting a breakdown of 95 of the USAEC's largest cost-type contracts of all types. He stated that 20 had gone to universities; 18 to chemical and minerals engineering firms; 16 to industrial design and engineering firms; 13 to people who provide services of various sorts, such as transportation, etc.; 10 to construction firms; 8 to industrial research firms; 5 to electrical equipment manufacturers; and 5 to hospitals and other private research organizations.....An indication of the accelerated spending rate of the USAEC are funds actually paid out, rather than obligated or appropriated, Dean mentioned. In fiscal 1950, he explained to the meeting, the USAEC actually paid out about $550 million; in the current fiscal year it will pay out $850 million; and in the next fiscal year it will pay out approximately one billion, 275 million dollars.

The 12th International Congress of Pure and Applied Chemistry, meeting in New York City Sept. 10-13th, this year, will have Glenn T. Seaborg as chairman of its section devoted to nuclear chemistry. The nuclear chemistry sessions, occupying four complete days of the Congress, will hear approximately 50 papers. Further information may be obtained from Harry L. Fisher, National Research Council, Washington 25, D. C.

At the American Chemical Society's meeting in New York City this Sept. 3-7th, a one day symposium on nucleonics and tracer techniques in analytical chemistry, presided over by C. J. Rodden, will hear six papers. Authors will inlude David N. Hume; Martin D. Kamen; Harrison Brown; A. A. Smales and B. D. Pate; James E. Hudgens, Jr. and C. J. van Niewenburg. The complete program is available from the ACS, in Washington, D. C.

First permanent construction at the USAEC's new Rocky Flats Plant, Denver, Colo., will be of a secret process building, the USAEC project engineer, David W. Persons recently announced. Of the $45 million total for the new plant, about two-thirds will be for construction of facilities, and the other third for land, engineering fees, specialized equipment, furnishings, etc. About 50% of the total construction will be awarded on open bidding.

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PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS- Landsverk Electrometer Co. which has now beecome associated with Technical Associates, Glendale, Calif., has made a change in its business organization, its plant location, and available facilities. Technical Associates has purchased a substantial interest in Landsverk, and a close working agreement has been reached whereby Technical Associates assumes much of the responsibility for financial and business management. Landsverk Electrometer Co. will concentrate on development and production of quartz fiber instruments. An interlocking board of directors will determine matters of policy. A new building is nearing completion, which will provide ample facilities for large production runs.

A research advisory board has now been set up by Tracerlab, Inc., Boston nuclear products manufacturer., Dr. Karl T. Compton will be chairman of the new board; Lewis L. Strauss, former USEAC commissioner, Dr. Charles D. Coryell, M.I.T. professor of chemistry, and Dr. Wendell C. Peacock will be the other members. The board will consider Tracerlab's research and development programs, advise on people working on such programs, and generally counsel Tracerlab's management. Dr. Compton and Mr. Strauss are directors of Tracerlab. (Last week, Tracerlab announced that it had been awarded a large Signal Corps order for the manufacture of "radiac" survey meters and demonstration model survey meters: the latter are to train Signal Corps service people.)

REPORT OF THE ADVISORY COMMITTEE ON COOPERATION BETWEEN ELECTRIC POWER INDUSTRY AND THE USAEC. Committee members: Philip Sporn, president, American Gas & Electric Co.; E.W. Morehouse, General Public Utilities Corp.; and Walton Seymour. (Highlights of this report follow)

The utilities are concerned with nuclear reactors, and in their development, as they are with boilers, turbines, generators, heat exchangers, the conventional types of power equipment, and fuels and their processing.

Security restrictions and the existent government monopoly have prevented the electric systems from their traditional participation in the atomic energy enterprise. This is in contrast to such concerns as chemical and equipment manufacturers. They can become AEC contractors, be an integral part of the atomic enterprise, and thus rise over the security barrier.

The special interest of the electric power industry in the atomic energy enterprise is the prospect of utilizing atomic power for ordinary central station purposes.

Whether and when atomic power becomes commercially feasible depends upon the USAEC's nuclear reactor program. Except for the piles producing plutonium for bombs, this program is still in the research and pilot plant stage.

The USEAC-Westinghouse land prototype for a submarine propulsion machine is well under construction at the Reactor Testing Station in Idaho. The companion project, for which General Electric is contractor, will soon be under construction. We are encouraged to believe that, before many years, one or both will actually be operating a submarine. The Materials Testing Reactor, scheduled for operation at the Idaho site, should also greatly advance fundamental reactor technology. We were impressed, too, by the homogeneous reactor at Oak Ridge, which promises to illuminate several key problems relevant to the eventual development of a practical power reactor and by the hopes in the possibility of nuclear breeding.

It is clear that no valid judgement can yet be made as to whether and on what scale nuclear reactors will ultimately contribute to our energy resources. Nevertheless, our own observations, reinforced by recent pronouncements of the USAEC, convince us that the prospects of an important new source of power within the next decades are robust enough to warrant a strong and continuing interest on the part of the electric power industry.

No one should expect that commercially feasible atomic power would mean radical reductions in power costs. However, the overall cost reduction could be significant for such industrial operations as reduction of magnesium and aluminum, refining of copper, production of cement, chlorine and caustic soda, and like operations where electric power is a substantial part of the cost of the final product.

RADIOISOTOPES & NUCLEAR RESEARCH...investigations and notes...

MEDICAL- In one year medical science has moved from pessimism to optimism in the treatment of the irradiation injuries that follow an atomic bomb blast, Dr. Franklin C. McLean, University of Chicago, recently told the annual meeting of the American Medical Association in Atlantic City. He observed that the chemicals cysteine, and glutathione, used before exposure, have been shown to ward off irradiation injury. After exposure, Dr. Franklin stated, the most useful treatment includes the use of the antibiotics such as streptomycin and terramycin to ward off subsequent infections; toluidine blue and protamine sulfate to control hemorrhages; and whole blood transfusions. He noted that since the pre-exposure methods are not possible for large groups, the most practicable treatment is· (1) Devote the first week after exposure to observation and good nursing care, and (2) Then use the antibiotics, the transfusions, and the drugs which combat hemorrhage, during the second week and subsequently.

BIOLOGICAL- Using large doses of radioactivity, a Columbia University research team has succeeded in preserving milk up to periods of at least one month under ordinary refrigeration, a meeting of the Institute of Food Technologists was told in New York recently. The research group, made up of two chemical engineers and a radiologist, utilized a 2 Mev X-ray machine in this work; the machine is part of the equipment of the Francis Delafield Hospital, in New York. Samples of raw milk were treated with as much as 100,000 r. It was found that the vitamin content was unimpaired at these radiation levels, and that no residual radioactivity could be detected in samples receiving up to 1,000,000 r. The samples were then stored under different conditions, and their storage life was compared with that of raw milk and pasteurized milk. The irradiated milk was found to remain salably fresh for greatly extended periods, depending on the amount of radiation the samples received. However, it has not been determined if the milk is fit for human consumption· A large-scale animal testing program is being initiated, in which the irradiated milk will be fed to fast reproducing animals to determine whether this method of preservation will have an adverse effect on the growth rate, reproductive processes, or hereditary characteristics of the animals. Additionally, the irradiation program will be extended to other food products.

NOTES- Now available from Temple University's Research Institute are oxygen-18 labeled compounds. Tagged compounds produced at Temple under an AEC contract, and available to qualified users, include carbon dioxide and carbon monoxide. Other oxygen-18 compounds planned for future production are acetic and formic acid; methyl and ethyl alcohol; water, and copper oxide. Where applicable, Temple has stated, the latter compounds will also be available with both carbon-14 and oxygen-18. Further information may be obtained from the Institute at 1926 N. Park Ave., Phila. 22, Pa., directing inquiries to A. D. Kirshenbaum.

The increasing volume of exports of radioactive isotopes from Great Britain's Atomic Energy Research Establishment, Harwell, is seen in the highest-ever figure that was reached this past May, with Eire and France as her best customers. During that month, 236 consignments left Britain, bringing the total number of shipments since the first of the year to 961, compared with 483 in the same period of 1950. Eire and France each received 71 shipments; Germany, some 36. Other countries to which isotopes were sent included Austria, Belgium, Denmark, Holland, Italy, New Zealand, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, and Turkey.

Fifteen new research contracts, including 10 in biology and medicine, and 5 in physical research, were awarded by the USAEC during this past May. Dr. F. O. Rice, Catholic University of America; Dr. James N. Pitts, Jr., Northwestern University; Dr. C. Bonilla, Columbia University; Dr. C. A. Crowley, of Graham, Crowley and Associates; and Dr. Lyman Spitzer, Princeton University, will conduct the physical research. Dr. Curt Richter, Johns Hopkins University; Dr. James E. Gunckel, Rutgers College; Dr. I. C. Gunsalus, University of Illinois; Drs. E. F. Frolik and R. Morris, University of Nebraska; Dr. Thomas G. Ward, Johns Hopkins University; Dr. Jonas S. Friedenwald, Johns Hopkins University; Dr. Robert B. Withrow, Smithsonian Institution; Dr. D. G. Cogan, Harvard University; Dr. P. B. Hudson, Columbia University, and Dr. W. H. Taliaferro, University of Chicago, will conduct the research in biology and medicine.

ATOMIC PATENT DIGEST...latest U.S. applications & grants...

Neutron detector. Comprises a body of neutron slowing material, arranged about certain neutron detection means, and with an opening trnnsmitting neutrons (possessing a detectable energy) to the neutron detection means. U.S. Pat. No. 2,556,768, issued June 12, 1951; assigned to United States of America (USEAC).

Gold beryllium alloy and method of manufacture: product is 8% by weight beryllium, and 92% by weight gold. Manufacturing process comprises mixing powders in this proportion; compacting the mixture in a die; heating the powders to a temperature of about 350 deg. C. for about one hour; and then compressing the mixture with a compressive force of at least 50 tons per square inch for five minutes. U. S. Pat. No. 2,556,921, issued June 12, 1951; assigned to United States of America (USEAC).

Radioactive exploration. A method of determining the radiation over an appreciable period of time from a predetermined section of an area being explored by a radiation detector in an aircraft. U. S. Pat. No. 2,557,158, issued June 19, 1951; assigned to Texaco Development Corp., New York, N. Y.

Short-wave electromagnetic radiation catoptrics. An X-ray or gamma ray imaging system. U. S. Pat. No. 2,557,662, issued June 19, 1951; assigned to Research Corp., Santa Monica, Calif.

NOTES - The following seven patents are the balance of the twenty-six made available to interested U. S. firms (on a royalty-free, but non-exclusive basis), and initially reported in this NEWSLETTER of June 19, 1951. (20) Mass spectrometer of simple and relatively inexpensive construction which is capable of analyzing light gases or isotopes thereof with a comparatively high degree of resolution. U. S. Pat. No. 2,551,544. (21) Cyclic organic fluorine compound and methods of manufacture. Organic compounds, containing one of more chlorinated aromatic nuclei, are acted upon by a fluorinating agent such as antimony pentafluoride or arsenic pentafluoride. U. S. Pat. No. 2,553,217. (22) Producing a radioactive halogen by bombarding with neutrons an organic halide to which has been added a free halogen which is chemically distinct from the halogen in the organic halide. U. S. Pat. No. 2,554,316. (23) Removing the element americium from solution by mixing a carbonate solution of pentavalent tantalum with a solution containing pentavalent americium and heating to precipitate tantalum as a hydrated oxide to carry americium from the solution. (24) Separation of radium from barium. An adsorption-chromatographic elution process for separating radium values from barium or other materials. U. S. Pat. No. 2,554,649. (25) Pressure measuring device of the Phillips ion gauge type consisting principally of two Phillips gauges so connected to a source of AC or DC power supply that corresponding electrodes of the two gauges are opposite in polarity. U.S. Pat. No. 2,554,792. (26) Photomultiplier circuit useful as a scintillation counter. Comprises a pair of photomultiplier tubes positioned to receive light from a single source, with the electrodes of the tubes interconnected so the output of one tube controls the output of the other tube.

BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Radioisotopes; Industrial Applications, by G. H. Guest. Uses of radioisotopes in metallurgy, ceramic research, chemical processing, etc. 185 pages. Pitman Publishing Corp., New York, N.Y. ($4.50)

Index to Semi-Annual Reports of the USEAC. The nine semi-annual reports cover the unclassified USAEC activities from its establishment in January, 1947, to January, 1951. In addition to progress accounts of the major programs, the last six semi-annual reports have included detailed presentations of a specific field of USAEC operation, i. e., isotopes production and distribution; production of fissionable material; research in the life sciences; physical science research; control of radiation hazards in the USEAC operations; and the USAEC's contract policies 40 page index. --Superintendent of Documents, Wash. 25, D. C. (20¢)

Sincerely,

The Staff
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